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TAGS: [AORC](#) [ENRG](#) [IAEA](#) [SENV](#) [TBIO](#) [TRGY](#) [NI](#)
SUBJECT: NIGERIA-INCREASING ASSISTANCE ON NUCLEAR SECURITY
AND SAFETY

Classified By: Economic Counselor Robert Tansey for Reasons 1.4 (b & d)
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11. (C/NF) SUMMARY: A Department of Energy (DOE) team from the National Nuclear Security Administration (NNSA), Office of Global Threat Reduction (GTR) visited Nigeria April 19-25 to assess the security and storage of radiological and nuclear materials in Nigeria. The Nigerian Nuclear Regulatory Authority (NNRA) was extremely cooperative and welcomed DOE's continued cooperation in protecting radiological and nuclear material in Nigeria. DOE has a pre-existing contractual assistance agreement with the NNRA until 2010. As a result of the visit, the DOE plans to provide assistance for physical protection upgrades at two hospitals, a nuclear research reactor, and for expansion of an existing facility as a national storage site for nuclear and radioactive materials. END SUMMARY.

Global Threat Reduction Initiative (GTRI)

12. (SBU) The GTR Office administers the Global Threat Reduction Initiative (GTRI) which addresses dangers posed by nuclear and radiological materials at civilian sites. The purpose of the April 19-25 trip was to conduct coordination meetings with the NNRA and propose physical protection upgrades at nuclear and radioactive facilities in Nigeria. The team was led by Abigail Cuthbertson, GTRI Country Officer for Nigeria, accompanied by Carolyn MacKenzie of Lawrence Livermore National Laboratory; Keith Frier, Jeremy Jamison and Michele Landreth of Pacific Northwest National Laboratory (PNNL); and Alexander Kovar from the International Atomic Energy Agency (IAEA). Initial meetings were held at NNRA headquarters in Abuja with site visits to Zaria, Ajaokuta, Lagos and Ibadan.

13. (SBU) The GTRI has been working in partnership with the IAEA and regional partners to: reduce and protect vulnerable nuclear and other radioactive material at civilian sites worldwide; convert highly enriched uranium (HEU) to low enriched uranium (LEU); remove or dispose of excess usable radiological materials, and protect at-risk usable nuclear and radiological materials from theft and sabotage. The program looks at protecting sources that are used for peaceful purposes which could be used by terrorists for "dirty bombs". The sources of the materials can be found at

radioactive waste storage facilities; research institutions; oncology and radiotherapy departments at hospitals; and sterilization and irradiation facilities.

Nigerian Nuclear Regulatory Administration (NNRA)

¶4. (SBU) The NNRA was established in 2001 and has the responsibility for nuclear safety and radiological protection regulation in Nigeria. This includes the possession and application of substances and devices emitting radiation; ensuring Nigeria meets national and international safeguards for safety; and advising the GON on nuclear safety, security and protection of radiological sources. The NNRA's major priorities for nuclear security are developing a national training program, repatriating unused radiological sources back to their points of origin, employing detection and monitoring equipment at air and sea ports, and more importantly establishing a secure, centralized radioactive waste storage facility within Nigeria.

Radiation Sources in Nigeria

¶5. (C/NF) In Nigeria there are a number of sectors where nuclear and radiation materials can be found and need to be protected, according to the DOE team. Two major sources are the nuclear reactor at the Center for Energy Research and Technology (CERT), and an irradiation facility at the Sheda

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Science and Technology Complex (SHESTCO). In the health sector there are over 5,000 x-ray machines, five radiotherapy centers and five nuclear medicine centers. In the petroleum industry, radioactive iridium, cobalt, cesium and radium are used in refineries, offshore platforms and jetty's for the import and export of products. The mining sector has thousands of tons of abandoned mine tailings in the form of technologically enhanced naturally occurring radioactive material. These radiological sources can also be found in the agriculture and water sectors as well as educational and research institutions. In the power sector Nigeria has two hydroelectric power plants producing approximately 3,000 megawatts (mw) with ancillary use of radioactive materials. Also, radiological sources can enter and exit through Nigeria's six seaports and four airports.

Security Incidents

¶6. (C/NF) In 2002, there was a fire at the National Veterinary Research Institute where two high-risk radiological sources were housed. The NNRA with IAEA assistance evacuated one of the sources into temporary storage and the other was transported out of Nigeria. In 2003, an illegally procured radiological source that was being used by an illegally operating company was stolen. Again in 2003 armed youths invaded a site where personnel had to be evacuated. When they returned the source was missing and has still not been found. Other incidents include radiological source material that was exported to Europe as scrap metal and eventually discovered at a recycling plant. There have been other incidents of mis-declaration and illegal export of radioactive sources.

Center of Energy Research and Training (CERT)

¶7. (C/NF) CERT is part of Ahmadu Bello University in Zaria. At the university is a 31 kilowatt miniature neutron source reactor (MNSR) that has one kilogram of HEU. The IAEA funded the reactor and its control panel which were manufactured in

China. It was commissioned in March 2004 and given a license to operate by the NNRA. The reactor is tentatively scheduled to be re-conditioned by the IAEA in 2010 at which time the HUE will be returned to China. The facility is presently being used for teaching, research and development activities, but it can also be used for the production of small quantities of selected short lived radioisotopes.

18. (C/NF) CERT is the only institution presently charged with storing disused radiological sources in Nigeria. The NNRA signed an MOU with CERT for temporary storage, but the storage facility is not large enough to be used as a national storage site. CERT and the GTRI Team noted that there is room for expansion and CERT representatives expressed receptiveness to being used as a national storage site, and in acquiring equipment and expertise related to conditioning sources for storage.

19. (C/NF) The team characterized the infrastructure, staff and security measures in place at CERT as impressive, but noted additional physical protection upgrades are required. For the reactor, GTRI promised to fund upgrades and the IAEA rep said it will provide remote security monitoring equipment. For the waste storage facility, IAEA may also fund the security upgrades and provide remote security monitoring equipment. From GTRI funds, the team indicated funding for expansion of the storage facility.

Ajaokuta Steel Company Limited (ASCL)- Ajaokuta

10. (C/NF) The \$5.6 billion ASCL plant was built in 1984 by the Soviets to produce steel. The plant has two mills working at minimum capacity, one 110 mw gas fired power plant, an aluminum factory, steel factory and multiple other

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industrial complexes. In an IAEA visit in August 2007, the IAEA was alarmed to see unused gauges, calibration standards and other sealed radioactive sources purchased originally from the Soviet Union in the 1980's still in unopened crates that were never installed. In addition, the IAEA found a small shed containing a disused Iridium (Ir)-192 industrial radiography source and two Cesium (Cs)-137 sources in shielded containers. (Note: Ir is used primarily in gauges for checking welding and in the treatment of cancer. Cs is used for drilling that is water soluble and extremely toxic. End Note.)

11. (C/NF) During this visit the sources were still in unopened crates in a warehouse on the complex grounds and one of the Cs-137 sources and one of the Ir-192 sources had been stolen. The NNRA explained that it had begun an investigation and insisted on the immediate movement of the remaining source to a warehouse facility on the complex. (Comment: The ASCL plant has been operating well below capacity, and in 2004, under allegedly questionable circumstances, was sold to Global Infrastructure Holdings Limited (GIFL) a subsidiary of the Indian steel conglomerate - Mittal Steel. In early April 2008 the GON canceled the concession due to poor performance and failure to comply with the major agreement provisions and placed it under interim management. In late April, GIFL filed a lawsuit at the International Chamber of Commerce, a leading international arbitration body for international disputes. The GON appointed an interim management committee, and when the team arrived on April 23, the new chairman, Philip Umunnakwe, was beginning his first day on the job. End Comment)

12. (C/NF) The team is proposing GTRI send experts to inventory all the sources, move them into ISO containers outfitted with physical protection upgrades recommended by PNNL and purchased by NNRA. The team will prepare a list of options for the disposing of the sources by NNRA and ASCL management. If removal to CERT is recommended and the

physical protection upgrades are completed at the CERT Waste Storage Facility, the IAEA may fund the transport of the sources where they could be conditioned and stored. The NNRA will then direct the ASCL staff to cooperate with the inventory and temporary storage of sources. Additionally, the NNRA will offer a radiation safety awareness workshop for the staff that will assist in the uncrating, inventorying and securing of sources in the ISO containers.

Sheda Science and Technology Complex (SHESTCO)

¶13. (C) SHESTCO is located in Abuja and is a gamma irradiation facility used for food irradiation, and sterilization of medical and pharmaceutical equipment. This is a new facility and the security precautions for both radiation safety and physical security the team found to be very good. SHESTCO hopes to expand its operations to include a large research reactor in preparation for eventual nuclear power in Nigeria. The IAEA may consider the installation of remote security monitoring equipment.

University College Hospital (UCH)

¶14. (C/NF) UCH is located in Ibadan and has two machines with radiological components. One is a new 2 Curie (Ci), Cobalt (Co)-60 brachytherapy machine that was provided by the IAEA. The other is a Co-60 MDS Nordion Theratron Teletherapy unit located in their oncology unit. (Note: Cobalt is a radioactive material used in radiotherapy and a Ci is a unit of radioactivity. End Note.) The original load in March 2003 on the teletherapy unit was 8209 Ci, but the current load is almost half that at 4183 Ci. With the decreased load comes decreased efficiency and longer treatments. Allegedly the manufacturer does not want to replace the source of the teletherapy unit because of the age but UCH is hopeful they will at least refurbish and provide a new source for the unit. If UCH acquires another unit, the head of the oncology

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department committed to putting both machines in the same bunker if physical security upgrades are installed. The GTRI pledged to fund the physical security upgrades.

EKO Hospital

¶15. (C/NF) EKO Hospital is in Lagos and is a private institution that has two Co-60 teletherapy machines. One was purchased in 1980 and is no longer used, the other is in use but its source is losing its effectiveness. The GTRI, IAEA and NNRA agreed to jointly pursue options available for removing the one disused source and transporting it to secure storage outside of Nigeria. If that is not possible, the IAEA may fund moving it to the CERT waste storage facility in Zaria. GTRI also pledged to fund physical protection upgrades.

¶16. (C/NF) Comment. The NNRA recognizes that there are priority areas for nuclear security in Nigeria. These include a national training program, repatriation of radioactive sources to their origins, provision of detection and monitoring equipment at the major air and sea ports, and the establishment of a centralized radioactive waste management facility. The GON has a daunting task to identify all known sources within the country, but GTRI's Search and Secure Project promises to augment the NNRA's capabilities with additional equipment and training. All the institutions visited were very supportive. Several institutions were not aware of the importance of securing radiological and nuclear material, and are looking forward to continued cooperation and assistance. End Comment.

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